SEQUENCE LISTING

<110> DEHESH et al.

<120> Engineering Beta Ketoacyl ACP Synthase for Novel Substrate Specificity

<130> 16516.117

<140> US 09/591,279
<141> 2000-06-09

<150> US 60/138,308
<151> 1999-06-09

<160> 47

<170> PatentIn version 3.0

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<210> 8
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<223> Oligonucleotide Primer L111A Sense

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gggattggcg gcgccggact gatcgaag 28

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cttcgatcag tccggcgccg ccaatccc 28

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gatcagccca ttcgcggtac cgtcaacgat tgtg 34

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<212> DNA
<213> Artificial Sequence

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gagaaagcca gtactccggc gggcgttggt gg 32

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<212> DNA
<213> Artificial Sequence

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<223> Oligonucleotide Primer L197A Antisense

<400> 16
ccaccaacgc ccgccggagt actggctttc tc 32

<210> 17
<211> 56
<212> DNA
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<223> Self annealed oligonucleotide primer

<400> 17
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<210> 18
<211> 366
<212> DNA
<213> Cuphea hookeriana

<400> 18
ctgagatctg tcgacatggc gaccgcttct cgcatggttg cgtccccttt ctgtacgtgg 60

ctcgtagctg catgcatgcc cacttcatcc gacaacgacc cacgttccct ttcccacaag 120

cggctccgcc tctcccgtcg ccggaggact ctctcctccc attgctccct ccgcggatcc 180

accttccaat gcctcgatcc ttgcaaccag caacgcttcc tcggggataa cggattcgct 240

tccctcttcg gatccaagcc tcttcgttca aatcgcggcc acctgaggct cggccgcact 300

tcccattccg gggaggtcat ggctgtggct atgcaacctg cacaggaagt ctccacaaga 360

tctgtc 366

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<213> Arabidopsis thaliana

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1 5 10 15

Pro Lys Lys Arg Val Val Ile Thr Gly Met Gly Leu Val Ser Val Cys
20 25 30

Gly Asn Asp Val Asp Ala Tyr Tyr Glu Lys Leu Leu Ser Gly Glu Ser
35 40 45

Gly Ile Ser Leu Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg
50 55 60

Phe Gly Gly Gln Ile Arg Gly Phe Ser Ser Glu Gly Tyr Ile Asp Gly
65 70 75 80

Lys Asn Glu Arg Arg Leu Asp Asp Cys Leu Lys Tyr Cys Ile Val Ala
85 90 95

Gly Lys Lys Ala Leu Glu Ser Ala Asn Leu Gly Gly Asp Lys Leu Asn
100 105 110

Thr Ile Asp Lys Arg Lys Ala Gly Val Leu Val Gly Thr Gly Met Gly
115 120 125

Gly Leu Thr Val Phe Ser Glu Gly Val Gln Asn Leu Ile Glu Lys Gly
130 135 140

His Arg Arg Ile Ser Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met
145 150 155 160

Gly Ser Ala Leu Leu Ala Ile Asp Leu Gly Leu Met Gly Pro Asn Tyr
165 170 175

Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala
180 185 190

Ala Asn His Asn His Arg Gly Glu Ala Asp Met Met Ile Ala Gly Gly
195 200 205

Thr Glu Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys
210 215 220

Arg Ala Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro
225 230 235 240

Trp Asp Lys Ala Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val
245 250 255

Leu Val Met Glu Ser Leu Glu His Ala Met Lys Arg Gly Ala Pro Ile
260 265 270

Val Ala Glu Tyr Leu Gly Gly Ala Val Asn Cys Asp Ala His His Met
275 280 285

Thr Asp Pro Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Arg
290 295 300

Cys Leu Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn
305 310 315 320

Ala His Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala
325 330 335

Ile Lys Lys Val Phe Lys Ser Thr Ser Gly Ile Lys Ile Asn Ala Thr
340 345 350

Lys Ser Met Ile Gly His Cys Leu Gly Ala Ala Gly Gly Leu Glu Ala
355 360 365

Ile Ala Thr Val Lys Ala Ile Asn Thr Gly Trp Leu His Pro Ser Ile
370 375 380

Asn Gln Phe Asn Pro Glu Gln Ala Val Asp Phe Asp Thr Val Pro Asn
385 390 395 400

Glu Lys Lys Gln His Glu Val Asp Val Ala Ile Ser Asn Ser Phe Gly
405 410 415

Phe Gly Gly His Asn Ser Val Val Ala Phe Ser Ala Phe Lys Pro
420 425 430

<210> 20
<211> 429
<212> PRT
<213> Brassica napus

<400> 20

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Lys Arg Val Val Ile Thr Gly Met Gly Leu Val Ser Val Phe Gly Asn
20 25 30

Asp Val Asp Ala Tyr Tyr Glu Lys Leu Leu Ser Gly Glu Ser Gly Ile
35 40 45

Ser Leu Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe Gly

50 55 60

Gly Gln Ile Arg Gly Phe Ser Ser Glu Gly Tyr Ile Asp Gly Lys Asn
65 70 75 80

Glu Arg Arg Leu Asp Asp Cys Leu Lys Tyr Cys Ile Val Ala Gly Lys
85 90 95

Lys Ala Leu Glu Ser Ala Asn Leu Gly Gly Asp Lys Leu Asn Thr Ile
100 105 110

Asp Lys Gln Lys Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly Leu
115 120 125

Thr Val Phe Ser Asp Gly Val Gln Ala Leu Ile Glu Lys Gly His Arg
130 135 140

Arg Ile Ser Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser
145 150 155 160

Ala Leu Leu Ala Ile Asp Leu Gly Leu Met Gly Pro Asn Tyr Ser Ile
165 170 175

Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala Ala Asn
180 185 190

His Ile Arg Arg Gly Glu Ala Asp Met Met Ile Ala Gly Gly Thr Glu
195 200 205

Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala
210 215 220

Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp Asp
225 230 235 240

Lys Gln Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu Val
245 250 255

Met Glu Ser Leu Glu His Ala Met Lys Arg Gly Ala Pro Ile Val Ala
260 265 270

Glu Tyr Leu Gly Gly Ala Val Asn Cys Asp Ala His His Met Thr Asp
275 280 285

Pro Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Cys Leu
290 295 300

Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala His
305 310 315 320

Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile Lys
325 330 335

Lys Val Phe Lys Ser Thr Ser Gly Ile Lys Ile Asn Ala Thr Lys Ser
340 345 350

Met Ile Gly His Cys Leu Gly Ala Ala Gly Gly Leu Glu Ala Ile Ala

355 360 365

Thr Val Lys Ala Ile Asn Thr Gly Trp Leu His Pro Ser Ile Asn Gln
370 375 380

Phe Asn Pro Glu Pro Ala Val Asp Phe Asp Thr Val Ala Asn Glu Lys
385 390 395 400

Lys Gln His Glu Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe Gly
405 410 415

Gly His Asn Ser Val Val Ala Phe Ser Ala Phe Lys Pro
420 425

<210> 21
<211> 350
<212> PRT
<213> Cuphea hookeriana

<400> 21

Ser Ser Thr Ala Val Ala Ala Ala Leu Glu Leu Val Asp Pro Pro Gly
1 5 10 15

Cys Arg Asn Ser Ala Arg Ala Asp Leu Gly Ala Asp Arg Leu Ser Lys
20 25 30

Ile Asp Lys Glu Arg Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly
35 40 45

Leu Thr Val Phe Ser Asp Gly Val Gln Ser Leu Ile Glu Lys Gly His
50 55 60

Arg Lys Ile Thr Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly
65 70 75 80

Ser Ala Leu Leu Ala Ile Glu Phe Gly Leu Met Gly Pro Asn Tyr Ser
85 90 95

Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe His Ala Ala Ala
100 105 110

Asn His Ile Arg Arg Gly Glu Ala Asp Leu Met Ile Ala Gly Gly Thr
115 120 125

Glu Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg
130 135 140

Ala Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp
145 150 155 160

Asp Lys Asp Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu
165 170 175

Val Met Glu Ser Leu Glu His Ala Met Arg Arg Gly Ala Pro Ile Ile
180 185 190

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Ala Glu Tyr Leu Gly Gly Ala Ile Asn Cys Asp Ala Tyr His Met Thr
        195                 200                 205

Asp Pro Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Ser
    210                 215                 220

Leu Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala
225                 230                 235                 240

His Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile
                245                 250                 255

Lys Lys Val Phe Lys Asn Thr Lys Asp Ile Lys Ile Asn Ala Thr Lys
            260                 265                 270

Ser Met Ile Gly His Cys Leu Gly Ala Ser Gly Gly Leu Glu Ala Ile
        275                 280                 285

Ala Thr Ile Lys Gly Ile Asn Thr Gly Trp Leu His Pro Ser Ile Asn
    290                 295                 300

Gln Phe Asn Pro Glu Pro Ser Val Glu Phe Asp Thr Val Ala Asn Lys
305                 310                 315                 320

Lys Gln Gln His Glu Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe
                325                 330                 335

Gly Gly His Asn Ser Val Val Ala Phe Ser Ala Phe Lys Pro
            340                 345                 350
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<212> PRT
<213> Cuphea hookeriana

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<400> 22

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            20                  25                  30

Arg Ala Gly Met Gly Leu Val Ser Val Phe Gly Ser Asp Val Asp Ser
        35                  40                  45

Tyr Tyr Glu Lys Leu Leu Ser Gly Glu Ser Gly Ile Ser Leu Ile Asp
    50                  55                  60

Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe Gly Gly Gln Ile Arg
65                  70                  75                  80
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Gly Phe Asn Ala Thr Gly Tyr Ile Asp Gly Lys Asn Asp Arg Arg Leu
85 90 95

Asp Asp Cys Leu Arg Tyr Cys Ile Val Ala Gly Lys Lys Ala Leu Glu
100 105 110

Asn Ser Asp Leu Gly Gly Glu Ser Leu Ser Lys Ile Asp Lys Glu Arg
115 120 125

Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly Leu Thr Val Phe Ser
130 135 140

Asp Gly Val Gln Asn Leu Ile Glu Lys Gly His Arg Lys Ile Ser Pro
145 150 155 160

Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser Ala Leu Leu Ala
165 170 175

Ile Asp Leu Gly Leu Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys
180 185 190

Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala Ala Asn His Ile Arg Arg
195 200 205

Gly Glu Ala Asp Leu Met Ile Ala Gly Gly Thr Glu Ala Ala Ile Ile
210 215 220

Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg
225 230 235 240

Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp Asp Lys Asp Arg Asp
245 250 255

Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu Val Met Glu Ser Leu
260 265 270

Glu His Ala Met Lys Arg Gly Ala Pro Ile Ile Ala Glu Tyr Leu Gly
275 280 285

Gly Ala Val Asn Cys Asp Ala Tyr His Met Thr Asp Pro Arg Ala Asp
290 295 300

Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Ser Leu Glu Asp Ala Gly
305 310 315 320

Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr
325 330 335

Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile Lys Lys Val Phe Lys
340 345 350

Asn Thr Lys Glu Ile Thr Ile Asn Ala Thr Lys Ser Met Ile Gly His
355 360 365

Cys Leu Gly Ala Ser Gly Gly Leu Glu Ala Ile Ala Thr Ile Lys Gly
370 375 380

Ile Thr Thr Gly Trp Leu His Pro Ser Ile Asn Gln Phe Asn Pro Glu
385 390 395 400

Pro Ser Val Glu Phe Asp Thr Val Ala Asn Lys Lys Gln Gln His Glu
405 410 415

Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser
420 425 430

Val Val Ala Phe Ser Ala Phe Lys Pro
435 440

<210> 23
<211> 430
<212> PRT
<213> Cuphea pullcherima

<400> 23

Arg Ala Ala Ser Pro Thr Val Ser Ala Pro Lys Arg Glu Thr Asp Pro
1 5 10 15

Lys Lys Arg Val Val Ile Thr Gly Met Gly Leu Val Ser Val Phe Gly
20 25 30

Ser Asp Val Asp Ala Tyr Tyr Asp Lys Leu Leu Ser Gly Glu Ser Gly
35 40 45

Ile Gly Pro Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe
50 55 60

Gly Gly Gln Ile Arg Gly Phe Asn Ser Met Gly Tyr Ile Asp Gly Lys
65 70 75 80

Asn Asp Arg Arg Leu Asp Asp Cys Leu Arg Tyr Cys Ile Val Ala Gly
85 90 95

Lys Lys Ser Leu Glu Asp Ala Asp Leu Gly Ala Asp Arg Leu Ser Lys
100 105 110

Ile Asp Lys Glu Arg Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly
115 120 125

Leu Thr Val Phe Ser Asp Gly Val Gln Ser Leu Ile Glu Lys Gly His
130 135 140

Arg Lys Ile Thr Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly
145 150 155 160

Ser Ala Leu Leu Ala Ile Glu Leu Gly Leu Met Gly Pro Asn Tyr Ser
165 170 175

Ile Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe His Ala Ala Ala
180 185 190

Asn His Ile Arg Arg Gly Glu Ala Asp Leu Met Ile Ala Gly Gly Thr

195 200 205

Glu Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg
210 215 220

Ala Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp
225 230 235 240

Asp Lys Asp Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu
245 250 255

Val Leu Glu Ser Leu Glu His Ala Met Lys Arg Gly Ala Pro Ile Ile
260 265 270

Ala Glu Tyr Leu Gly Gly Ala Ile Asn Cys Asp Ala Tyr His Met Thr
275 280 285

Asp Pro Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Ser
290 295 300

Leu Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala
305 310 315 320

His Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile
325 330 335

Lys Lys Val Phe Lys Asn Thr Lys Asp Ile Lys Ile Asn Ala Thr Lys
340 345 350

Ser Met Ile Gly His Cys Leu Gly Ala Ser Gly Gly Leu Glu Ala Ile
355 360 365

Ala Thr Ile Lys Gly Ile Asn Thr Gly Trp Leu His Pro Ser Ile Asn
370 375 380

Gln Phe Asn Pro Glu Pro Ser Val Glu Phe Asp Thr Val Ala Asn Lys
385 390 395 400

Lys Gln Gln His Glu Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe
405 410 415

Gly Gly His Asn Ser Val Val Ala Phe Ser Ala Phe Lys Pro
420 425 430

<210> 24
<211> 428
<212> PRT
<213> Cuphea pullcherima

<400> 24

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20 25 30

Val Asp Ala Tyr Tyr Asp Lys Leu Leu Ser Gly Glu Ser Gly Ile Ser
35 40 45

Leu Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe Ala Gly
50 55 60

Gln Ile Arg Gly Phe Asn Ala Thr Gly Tyr Ile Asp Gly Lys Asn Asp
65 70 75 80

Arg Arg Leu Asp Asp Cys Leu Arg Tyr Cys Ile Val Ala Gly Lys Lys
85 90 95

Ala Leu Glu Asp Ala Asp Leu Ala Gly Gln Ser Leu Ser Lys Ile Asp
100 105 110

Lys Glu Arg Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly Leu Thr
115 120 125

Val Phe Ser Asp Gly Val Gln Asn Leu Ile Glu Lys Gly His Arg Lys
130 135 140

Ile Ser Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser Ala
145 150 155 160

Leu Leu Ala Ile Asp Leu Gly Leu Met Gly Pro Asn Tyr Ser Ile Ser
165 170 175

Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala Ala Asn His
180 185 190

Ile Arg Arg Gly Glu Ala Asp Leu Met Ile Ala Gly Gly Thr Glu Ala
195 200 205

Ala Val Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala Leu
210 215 220

Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp Asp Lys
225 230 235 240

Asp Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu Val Met
245 250 255

Glu Ser Leu Glu His Ala Met Lys Arg Gly Ala Pro Ile Ile Ala Glu
260 265 270

Tyr Leu Gly Gly Ala Val Asn Cys Asp Ala Tyr His Met Thr Asp Pro
275 280 285

Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Ser Ser Leu Glu
290 295 300

Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala His Ala
305 310 315 320

Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile Lys Lys
325 330 335

Val Phe Lys Asn Thr Lys Glu Ile Lys Ile Asn Ala Thr Lys Ser Met
340 345 350

Ile Gly His Cys Leu Gly Ala Ser Gly Gly Leu Glu Ala Ile Ala Thr
355 360 365

Ile Lys Gly Ile Thr Thr Gly Trp Leu His Pro Ser Ile Asn Gln Phe
370 375 380

Asn Pro Glu Pro Ser Val Asp Phe Asn Thr Val Ala Asn Lys Lys Gln
385 390 395 400

Gln His Glu Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe Gly Gly
405 410 415

His Asn Ser Val Val Ala Phe Ser Ala Phe Lys Pro
420 425

<210> 25
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<212> PRT
<213> Hordeum vulgare

<400> 25

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20 25 30

Phe Tyr Asp Arg Leu Leu Ala Gly Glu Ser Gly Val Gly Pro Ile Asp
35 40 45

Arg Phe Asp Ala Ser Ser Phe Pro Thr Arg Phe Ala Gly Gln Ile Arg
50 55 60

Gly Phe Ser Ser Glu Gly Tyr Ile Asp Gly Lys Asn Asp Arg Arg Leu
65 70 75 80

Asp Asp Cys Ile Arg Tyr Cys Ile Leu Ser Gly Lys Lys Ala Leu Glu
85 90 95

Ser Ala Gly Leu Gly Ala Gly Ser Asp Ala His Val Lys Leu Asp Val
100 105 110

Gly Arg Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly Leu Ser Val
115 120 125

Phe Ser Asp Gly Val Gln Asn Leu Ile Glu Lys Gly Tyr Arg Lys Ile
130 135 140

Ser Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser Ala Leu
145 150 155 160

Leu Ala Ile Asp Val Gly Phe Met Gly Pro Asn Tyr Ser Ile Ser Thr
165 170 175

Ala Cys Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala Ala Asn His Ile
180 185 190

Arg Arg Gly Glu Ala Asp Ile Ile Val Ala Gly Gly Thr Glu Ala Ala
195 200 205

Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala Leu Ser
210 215 220

Gln Arg Asn Asp Asp Pro Ile Thr Ala Cys Arg Pro Trp Asp Lys Glu
225 230 235 240

Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu Val Met Glu
245 250 255

Ser Leu Glu His Ala Met Lys Arg Asp Ala Pro Ile Ile Ala Glu Tyr
260 265 270

Leu Gly Gly Ala Val Asn Cys Asp Ala Tyr His Met Thr Asp Pro Arg
275 280 285

Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Thr Met Ser Leu Arg Asp
290 295 300

Ala Gly Val Ala Pro Glu Glu Val Asn Tyr Ile Asn Ala His Ala Thr
305 310 315 320

Ser Thr Leu Ala Gly Asp Leu Ala Glu Val Arg Ala Ile Lys Gln Val
325 330 335

Phe Lys Asn Pro Ser Glu Ile Lys Ile Asn Ser Thr Lys Ser Met Ile
340 345 350

Gly His Cys Leu Gly Ala Ala Gly Gly Leu Glu Ala Ile Ala Thr Ile
355 360 365

Lys Ser Ile Thr Thr Gly Trp Val His Pro Thr Ile Asn Gln Phe Asn
370 375 380

Pro Glu Pro Glu Val Asp Phe Asp Thr Val Ala Asn Glu Lys Lys Gln
385 390 395 400

His Glu Val Asn Val Gly Ile Ser Asn Ser Phe Gly Phe Gly Gly His
405 410 415

Asn Ser Val Val Val Phe Ala Pro Phe Lys Pro
420 425

<210> 26
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<212> PRT
<213> Ricinus communis

<400> 26

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20 25 30

Asp Val Asp Thr Tyr Tyr Asp Lys Leu Leu Ala Gly Glu Ser Gly Ile
35 40 45

Gly Leu Ile Asp Arg Phe Asp Ala Ser Lys Phe Pro Thr Arg Phe Gly
50 55 60

Gly Gln Ile Arg Gly Phe Asn Ser Gln Gly Tyr Ile Asp Gly Lys Asn
65 70 75 80

Asp Arg Arg Leu Asp Asp Cys Leu Arg Tyr Cys Ile Val Ala Gly Lys
85 90 95

Lys Ala Leu Glu His Ala Asp Leu Gly Gly Asp Lys Leu Ser Lys Ile
100 105 110

Asp Lys Glu Arg Ala Gly Val Leu Val Gly Thr Gly Met Gly Gly Leu
115 120 125

Thr Val Phe Ser Asp Gly Val Gln Ala Leu Ile Glu Lys Gly His Arg
130 135 140

Lys Ile Thr Pro Phe Phe Ile Pro Tyr Ala Ile Thr Asn Met Gly Ser
145 150 155 160

Ala Leu Leu Ala Ile Glu Leu Gly Leu Met Gly Pro Asn Tyr Ser Ile
165 170 175

Ser Thr Ala Cys Ala Thr Ser Asn Tyr Cys Phe Tyr Ala Ala Ala Asn
180 185 190

His Ile Arg Arg Gly Glu Ala Glu Leu Met Ile Ala Gly Gly Thr Glu
195 200 205

Ala Ala Ile Ile Pro Ile Gly Leu Gly Gly Phe Val Ala Cys Arg Ala
210 215 220

Leu Ser Gln Arg Asn Asp Asp Pro Gln Thr Ala Ser Arg Pro Trp Asp
225 230 235 240

Lys Asp Arg Asp Gly Phe Val Met Gly Glu Gly Ala Gly Val Leu Val
245 250 255

Met Glu Ser Leu Glu His Ala Met Lys Arg Gly Ala Pro Ile Ile Ala
260 265 270

Glu Tyr Leu Gly Gly Ala Val Asn Cys Asp Ala Tyr His Met Thr Asp
275 280 285

Pro Arg Ala Asp Gly Leu Gly Val Ser Ser Cys Ile Glu Arg Ser Leu
290 295 300

Glu Asp Ala Gly Val Ser Pro Glu Glu Val Asn Tyr Ile Asn Ala His

305 310 315 320

Ala Thr Ser Thr Leu Ala Gly Asp Leu Ala Glu Ile Asn Ala Ile Lys
325 330 335

Lys Val Phe Lys Asn Thr Ser Asp Ile Lys Ile Asn Ala Thr Lys Ser
340 345 350

Met Ile Gly His Cys Leu Gly Ala Ala Gly Gly Leu Glu Ala Ile Ala
355 360 365

Cys Val Lys Ala Ile Thr Thr Gly Trp Leu His Pro Thr Ile Asn Gln
370 375 380

Phe Asn Pro Glu Pro Ser Val Glu Phe Asp Thr Val Ala Asn Lys Lys
385 390 395 400

Gln Gln His Glu Val Asn Val Ala Ile Ser Asn Ser Phe Gly Phe Gly
405 410 415

Gly His Asn Ser Val Val Ala Phe Ser Ala Phe Lys
420 425

<210> 27
<211> 420
<212> PRT
<213> Capsicum chinense

<400> 27

Lys Arg Glu Thr Asp Pro Lys Lys Arg Ile Val Ile Thr Gly Met Gly
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Leu Val Ser Val Phe Gly Ser Asp Ile Asp Asn Phe Tyr Asn Lys Leu
20 25 30

Leu Glu Gly Gln Ser Gly Ile Ser Leu Ile Asp Arg Phe Asp Ala Ser
35 40 45

Ser Tyr Thr Val Arg Phe Ala Gly Gln Ile Arg Asp Phe Ser Ser Glu
50 55 60

Gly Tyr Ile Asp Gly Lys Asn Asp Arg Arg Leu Asp Asp Cys Trp Arg
65 70 75 80

Tyr Cys Leu Val Ala Gly Lys Arg Ala Leu Glu Asp Ala Asn Leu Gly
85 90 95

Gln Gln Val Leu Asp Thr Met Asp Lys Thr Arg Ile Gly Val Leu Val
100 105 110

Gly Ser Ser Met Gly Gly Ser Lys Val Phe Ala Asp Ala Val Glu Ala
115 120 125

Leu Val Gln Arg Gly Tyr Lys Lys Ile Asn Pro Phe Phe Ile Pro Tyr
130 135 140

Ser Ile Thr Asn Met Gly Ser Ala Leu Leu Ala Ile Asp Thr Gly Leu
145 150 155 160

Met Gly Pro Thr Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ala Asn Tyr
165 170 175

Cys Phe Tyr Ala Ser Ala Asn His Ile Arg Arg Gly Glu Ala Asp Ile
180 185 190

Met Val Ala Gly Gly Thr Asp Ala Phe Ile Ser Ala Ile Gly Val Gly
195 200 205

Gly Leu Ile Ala Cys Arg Ala Leu Ser Gln Arg Asn Asp Glu Tyr Glu
210 215 220

Lys Ala Ser Arg Pro Trp Asp Arg Asn Arg Asp Gly Phe Val Ile Gly
225 230 235 240

Glu Gly Ser Gly Val Leu Val Met Glu Asn Leu Glu His Ala Leu Lys
245 250 255

Arg Gly Ala Pro Ile Ile Ala Glu Tyr Leu Gly Gly Ala Ile Thr Cys
260 265 270

Asp Ala His His Ile Thr Asp Pro Arg Ala Asp Gly Leu Gly Val Ser
275 280 285

Ser Cys Ile Val Met Ser Leu Val Asp Ala Gly Val Ser Pro Glu Glu
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Leu Ala Gly Asp Leu
305 310 315 320

Ala Glu Val Asn Ala Ile Lys Lys Val Phe Lys Asp Thr Ser Glu Ile
325 330 335

Lys Met Asn Gly Thr Lys Ser Met Ile Gly His Gly Leu Gly Ala Ser
340 345 350

Gly Gly Leu Glu Ala Ile Ala Thr Ile Lys Ala Ile Thr Thr Gly Trp
355 360 365

Leu His Pro Thr Ile Asn Gln Tyr Asp Leu Glu Pro Gln Val Thr Ile
370 375 380

Asp Thr Val Pro Asn Val Lys Lys Gln His Glu Val Asn Val Gly Ile
385 390 395 400

Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Val Val Val Phe Ala
405 410 415

Pro Tyr Lys Pro
420

<210> 28
<211> 420
<212> PRT

<213> Cuphea hookeriana

<400> 28

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Lys Lys Lys Pro Ser Ile Lys Gln Arg Arg Val Val Val Thr Gly Met
1               5                  10                  15

Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Phe Tyr Asn Asn
            20                  25                  30

Leu Leu Asp Gly Thr Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys
        35                  40                  45

Ala Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
    50                  55                  60

Asp Gly Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65                  70                  75                  80

Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Thr Asn Gly Gly Ile
                85                  90                  95

Thr Glu Asp Val Met Lys Glu Leu Asp Lys Arg Lys Cys Gly Val Leu
            100                 105                 110

Ile Gly Ser Ala Met Gly Gly Met Lys Val Phe Asn Asp Ala Ile Glu
        115                 120                 125

Ala Leu Arg Ile Ser Tyr Lys Lys Met Asn Pro Phe Cys Val Pro Phe
    130                 135                 140

Ala Thr Thr Asn Met Gly Ser Ala Met Leu Ala Met Asp Leu Gly Trp
145                 150                 155                 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
                165                 170                 175

Cys Ile Leu Asn Ala Ala Asn His Ile Ile Arg Gly Glu Ala Asp Val
            180                 185                 190

Met Leu Cys Gly Gly Ser Asp Ala Val Ile Ile Pro Ile Gly Met Gly
        195                 200                 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Ala Asp Pro Thr
    210                 215                 220

Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val Met Gly
225                 230                 235                 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
                245                 250                 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
            260                 265                 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Asp Gly Ala Gly Val Ile
        275                 280                 285
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Leu Cys Ile Glu Lys Ala Leu Ala Gln Ser Gly Val Ser Arg Glu Asp
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile
305 310 315 320

Lys Glu Tyr Gln Ala Leu Ile His Cys Phe Gly Gln Asn Asn Glu Leu
325 330 335

Lys Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala
340 345 350

Gly Gly Val Glu Ala Val Ser Val Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Ile Asn Leu Glu Asn Pro Asp Glu Gly Val Asp Thr
370 375 380

Lys Leu Leu Val Gly Pro Lys Lys Glu Arg Leu Asn Ile Lys Val Gly
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Tyr Asn
420

<210> 29
<211> 420
<212> PRT
<213> Cuphea hookeriana

<400> 29

Asn Lys Lys Pro Ala Thr Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Tyr Tyr Asn Asn
20 25 30

Leu Leu Asp Gly Ile Ser Gly Ile Ser Glu Ile Glu Asn Phe Asp Cys
35 40 45

Ser Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Phe Ser Glu Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Ala Asp Gly Gly Ile
85 90 95

Thr Glu Asp Ala Met Lys Glu Leu Asn Lys Arg Lys Cys Gly Val Leu
100 105 110

Ile Gly Ser Gly Leu Gly Gly Met Lys Val Phe Ser Asp Ser Ile Glu

115 120 125

Ala Leu Arg Thr Ser Tyr Lys Lys Ile Ser Pro Phe Cys Val Pro Phe
130 135 140

Ser Thr Thr Asn Met Gly Ser Ala Ile Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Asn Ala Ala Asn His Ile Ile Lys Gly Glu Ala Asp Met
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Ala Val Leu Pro Val Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Asn Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
245 250 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Ala Gly Val Ile
275 280 285

Leu Cys Ile Glu Lys Ala Leu Ala Gln Ser Gly Val Ser Arg Glu Asp
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile
305 310 315 320

Lys Glu Tyr Gln Ala Leu Ala His Cys Phe Gly Gln Asn Ser Glu Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Gly Ala
340 345 350

Gly Gly Val Glu Ala Val Ala Val Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Ile Asn Leu Glu Asp Pro Asp Glu Gly Val Asp Ala
370 375 380

Lys Leu Leu Val Gly Pro Lys Lys Glu Lys Leu Lys Val Lys Val Gly
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Cys Asn

420

<210> 30
<211> 420
<212> PRT
<213> Cuphea pullcherima

<400> 30

Lys Lys Lys Pro Ser Ile Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Phe Tyr Asn Asn
20 25 30

Leu Leu Asp Gly Thr Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys
35 40 45

Ala Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Thr Asp Gly Gly Ile
85 90 95

Thr Glu Asp Val Met Lys Glu Leu Asp Lys Arg Lys Cys Gly Val Leu
100 105 110

Ile Gly Ser Ala Met Gly Gly Met Lys Val Phe Asn Asp Ala Ile Glu
115 120 125

Ala Leu Arg Ile Ser Tyr Lys Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Met Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Met Asn Ala Ala Asn His Ile Ile Arg Gly Glu Ala Asp Val
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Val Ile Ile Pro Ile Gly Met Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Ser Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
245 250 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Asp Gly Ala Gly Val Ile
275 280 285

Leu Cys Ile Glu Lys Ala Leu Ala Gln Ser Gly Val Ser Arg Glu Asp
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile
305 310 315 320

Lys Glu Tyr Gln Ala Leu Ile His Cys Phe Gly Gln Asn Arg Glu Leu
325 330 335

Lys Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala
340 345 350

Gly Gly Val Glu Ala Val Ser Val Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Ile Asn Leu Glu Asn Pro Asp Glu Gly Val Asp Thr
370 375 380

Lys Leu Leu Val Gly Pro Lys Lys Glu Arg Leu Asn Val Lys Val Gly
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Tyr Ile
420

<210> 31
<211> 421
<212> PRT
<213> Cuphea wrightii

<400> 31

Lys Lys Lys Pro Val Ile Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Glu Pro Asp Val Phe Tyr Asn Asn
20 25 30

Leu Leu Asp Gly Val Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys
35 40 45

Thr Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Leu Leu Thr Ala Gly Lys Lys Ala Leu Ala Asp Gly Gly Ile
85 90 95

Thr Asp Glu Val Met Lys Glu Leu Asp Lys Arg Lys Cys Gly Val Leu
100 105 110

Ile Gly Ser Gly Met Gly Gly Met Lys Val Phe Asn Asp Ala Ile Glu
115 120 125

Ala Leu Arg Val Ser Tyr Lys Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Met Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Asn Ala Ala Asn His Ile Ile Arg Gly Glu Ala Asp Met
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Val Ile Ile Pro Ile Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Ser Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
245 250 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Ala Gly Val Ile
275 280 285

Leu Cys Ile Glu Lys Ala Leu Ala Gln Ala Gly Val Ser Lys Glu Asp
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Ser Ala Gly Asp Ile
305 310 315 320

Lys Glu Tyr Gln Ala Leu Ala Arg Cys Phe Gly Gln Asn Ser Glu Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala
340 345 350

Gly Gly Val Glu Ala Val Thr Val Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Leu Asn Leu Glu Asp Pro Asp Lys Ala Val Asp Ala
370 375 380

Lys Leu Leu Val Gly Pro Lys Lys Glu Arg Leu Asn Val Lys Val Gly
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Cys Asn Val
420

<210> 32
<211> 420
<212> PRT
<213> Cuphea wrightii

<400> 32

Lys Lys Lys Pro Val Thr Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Phe Tyr Asn Asn
20 25 30

Leu Leu Asp Gly Val Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys
35 40 45

Thr Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Ala Asp Ala Gly Ile
85 90 95

Thr Glu Asp Val Met Lys Glu Leu Asp Lys Arg Lys Cys Gly Val Leu
100 105 110

Ile Gly Ser Gly Met Gly Gly Met Lys Leu Phe Asn Asp Ser Ile Glu
115 120 125

Ala Leu Arg Ile Ser Tyr Lys Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Met Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Asn Ala Ala Asn His Ile Ile Arg Gly Glu Ala Asp Met
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Ala Ile Ile Pro Ile Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Asn Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Ser Asn Arg Asp Gly Phe Val Met Gly

225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
245 250 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Ala Gly Val Ile
275 280 285

Leu Cys Ile Glu Arg Ala Leu Ala Gln Ser Gly Val Ser Lys Glu Asp
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Ile
305 310 315 320

Lys Glu Tyr Gln Ala Leu Ala Arg Ile Phe Ser Gln Asn Ser Glu Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala
340 345 350

Gly Gly Val Glu Ala Val Thr Val Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Ile Asn Leu Glu Asn Pro Asp Asp Gly Val Asp Ala
370 375 380

Lys Leu Leu Val Gly Pro Lys Lys Glu Lys Leu Lys Val Lys Val Gly
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Cys Asn
420

<210> 33
<211> 420
<212> PRT
<213> Hordeum vulgare

<400> 33

Lys Lys Arg Pro Asp Val Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Asp Pro Asp Val Phe Tyr Thr Asn
20 25 30

Leu Leu Asp Gly His Ser Gly Ile Ser Glu Ile Glu Thr Phe Asp Cys
35 40 45

Ser Lys Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Glu Gly Trp Val Val Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Leu Ile Thr Ala Gly Lys Lys Ala Leu Glu Asn Gly Gly Leu
85 90 95

Thr Glu Glu Val Arg Asn Glu Leu Asp Lys Thr Arg Cys Gly Val Leu
100 105 110

Ile Gly Ser Ala Met Gly Gly Met Lys Val Phe Asn Asp Ala Ile Glu
115 120 125

Ala Leu Arg Val Ser Tyr Arg Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Ile Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Asn Ala Ala Asn His Ile Arg Arg Gly Glu Ala Asp Val
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Pro Leu Ile Pro Ile Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Ser Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Met Asp Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Val Leu Glu Glu Leu Glu His Ala Lys Gln
245 250 255

Arg Gly Ala Thr Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Thr Gly Ile Thr
275 280 285

Leu Cys Ile Glu Lys Ala Leu Ala Asp Ser Gly Val Ala Arg Glu Glu
290 295 300

Ile Asn Tyr Val Asn Ala His Ala Thr Ser Thr Gln Ser Gly Asp Leu
305 310 315 320

Lys Glu Tyr Glu Ala Ile Val Arg Cys Phe Gly Gln Asn Pro Gln Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Thr Gly His Leu Ile Gly Ala Ala
340 345 350

Gly Gly Ile Glu Ala Val Ala Cys Val Gln Ala Ile Arg Thr Gly Trp
355 360 365

Val His Pro Asn Leu Asn Leu Glu Asn Pro Glu Lys Val Val Asp Val
370 375 380

Gly Val Leu Val Gly Ser Glu Lys Glu Arg Cys Glu Val Lys Val Ala
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Phe Lys
420

<210> 34
<211> 419
<212> PRT
<213> Hordeum vulgare

<400> 34

Asn Asn Lys Ser Glu Thr Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Thr Pro Leu Gly His Glu Pro Asp Glu Phe Tyr Asn Asn
20 25 30

Leu Leu Gln Gly Val Ser Gly Val Ser Glu Ile Glu Ala Phe Asp Cys
35 40 45

Ser Ser Tyr Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Leu Ala Lys Arg Met Asp Lys Phe Met
65 70 75 80

Gln Tyr Leu Ile Val Ala Gly Lys Lys Ala Leu Asp Asn Gly Gly Val
85 90 95

Thr Glu Asp Ile Met Asn Glu Leu Asp Lys Ser Arg Cys Gly Val Leu
100 105 110

Ile Gly Ser Gly Met Gly Gly Met Lys Val Phe Ser Asp Ala Ile Glu
115 120 125

Ala Leu Arg Val Ser Tyr Arg Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Val Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Ser Ala Ala Asn His Ile Met Arg Gly Glu Thr Asp Leu
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Pro Ile Ile Pro Ile Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Ser Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Val Asp Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Gln
245 250 255

Arg Gly Ala Glu Ile Tyr Ala Glu Phe Leu Gly Gly Asn Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro His Pro Glu Gly Lys Gly Val Ile
275 280 285

Leu Cys Val Glu Asn Ala Leu Ala Asp Ala Gly Val Thr Arg Gln Asp
290 295 300

Ile Asn Tyr Val Asn Ala His Ala Thr Ser Thr Gln Leu Gly Asp Leu
305 310 315 320

Lys Glu Phe Glu Ala Leu Arg Arg Cys Phe Gly Gln Asn Pro Gln Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Thr Gly His Leu Leu Gly Ala Ala
340 345 350

Gly Gly Ile Glu Ala Val Ala Ala Ile Gln Ala Ile Arg Thr Gly Trp
355 360 365

Ile His Pro Asn Ile Asn Leu Asn Asn Pro Glu Lys Asn Val Asp Val
370 375 380

Ser Leu Leu Val Gly Ser Gln Lys Glu Arg Cys Asp Val Lys Val Ala
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Leu Phe
405 410 415

Ala Pro Phe

<210> 35
<211> 420
<212> PRT
<213> Ricinus communis

<400> 35

Asn Lys Lys Pro Leu Met Lys Gln Arg Arg Val Val Val Thr Gly Met
1 5 10 15

Gly Val Val Ser Pro Leu Gly His Asp Ile Asp Val Tyr Tyr Asn Asn
20 25 30

Leu Leu Asp Gly Ser Ser Gly Ile Ser Gln Ile Asp Ser Phe Asp Cys

35 40 45

Ala Gln Phe Pro Thr Arg Ile Ala Gly Glu Ile Lys Ser Phe Ser Thr
50 55 60

Asp Gly Trp Val Ala Pro Lys Leu Ser Lys Arg Met Asp Lys Phe Met
65 70 75 80

Leu Tyr Met Leu Thr Ala Gly Lys Lys Ala Leu Ala Asp Gly Gly Ile
85 90 95

Thr Glu Asp Met Met Asp Glu Leu Asp Lys Ala Arg Cys Gly Val Leu
100 105 110

Ile Gly Ser Ala Met Gly Gly Met Lys Val Phe Asn Asp Ala Ile Glu
115 120 125

Ala Leu Arg Ile Ser Tyr Arg Lys Met Asn Pro Phe Cys Val Pro Phe
130 135 140

Ala Thr Thr Asn Met Gly Ser Ala Met Leu Ala Met Asp Leu Gly Trp
145 150 155 160

Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ser Asn Phe
165 170 175

Cys Ile Leu Asn Ala Ala Asn His Ile Ile Arg Gly Glu Ala Asp Ile
180 185 190

Met Leu Cys Gly Gly Ser Asp Ala Ala Ile Ile Pro Ile Gly Leu Gly
195 200 205

Gly Phe Val Ala Cys Arg Ala Leu Ser Gln Arg Asn Asp Asp Pro Thr
210 215 220

Lys Ala Ser Arg Pro Trp Asp Met Asn Arg Asp Gly Phe Val Met Gly
225 230 235 240

Glu Gly Ala Gly Val Leu Leu Leu Glu Glu Leu Glu His Ala Lys Lys
245 250 255

Arg Gly Ala Asn Ile Tyr Ala Glu Phe Leu Gly Gly Ser Phe Thr Cys
260 265 270

Asp Ala Tyr His Met Thr Glu Pro Arg Pro Asp Gly Val Gly Val Ile
275 280 285

Leu Cys Ile Glu Lys Ala Leu Ala Arg Ser Gly Val Ser Lys Glu Glu
290 295 300

Val Asn Tyr Ile Asn Ala His Ala Thr Ser Thr Pro Ala Gly Asp Leu
305 310 315 320

Lys Glu Tyr Glu Ala Leu Met Arg Cys Phe Ser Gln Asn Pro Asp Leu
325 330 335

Arg Val Asn Ser Thr Lys Ser Met Ile Gly His Leu Leu Gly Ala Ala

340 345 350

Gly Ala Val Glu Ala Ile Ala Thr Ile Gln Ala Ile Arg Thr Gly Trp
355 360 365

Val His Pro Asn Ile Asn Leu Glu Asn Pro Glu Glu Gly Val Asp Thr
370 375 380

Lys Val Leu Val Gly Pro Lys Lys Glu Arg Leu Asp Ile Lys Val Ala
385 390 395 400

Leu Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Ser Ile Ile Phe
405 410 415

Ala Pro Tyr Lys
420

<210> 36
<211> 413
<212> PRT
<213> Caenorhabditis elegans

<220>
<221> misc_feature
<222> (53)..(53)
<223> Xaa in position 53 in unknown.

<400> 36

Met Lys Leu Lys Ile Asn Lys Asn Phe Glu Met His Arg Val Val Ile
1 5 10 15

Thr Gly Met Gly Ala Ile Ser Pro Phe Gly Val Thr Val Asn Ala Leu
20 25 30

Arg Asn Gly Leu Asn Glu Gly Arg Ser Gly Leu Lys Tyr Asp Glu Ile
35 40 45

Leu Lys Phe Val Xaa Gly Ala Val Pro Gly Glu Arg Val Glu Asp Arg
50 55 60

Trp Ser Thr Gly Gln Gln Arg Glu Met Ser Lys Ala Ser Met Phe Val
65 70 75 80

Leu Ala Ala Ser Glu Glu Ala Leu Lys Gln Ala Lys Ala Glu Asp Val
85 90 95

Asp His Asn Glu Thr Leu Val Asn Ile Gly Thr Cys Met Ser Asp Leu
100 105 110

Glu His Ile Gly Glu Thr Ala Gln Lys Val Ser Glu Gly Gln Ser Arg
115 120 125

Arg Val Ser Pro Tyr Phe Val Pro Arg Ile Leu Asn Asn Leu Pro Ala
130 135 140

Gly Tyr Val Ala Met Lys Tyr Lys Met Arg Gly Gly Val Glu Ser Thr
145 150 155 160

Ser Thr Ala Cys Ala Thr Gly Leu His Cys Ile Gly Asn Ser Phe Arg
165 170 175

Ser Ile Arg Tyr Gly Asp Ser Arg Arg Ala Leu Ala Gly Ala Val Glu
180 185 190

Cys Ala Leu Asn Pro Ile Ala Leu Ala Gly Phe Asp Arg Met Arg Ala
195 200 205

Leu Ala Arg Gly Asp Gln Pro Asn Ile Ser Arg Pro Phe Asp Lys Lys
210 215 220

Arg Ala Gly Phe Val Met Ser Glu Gly Val Gly Leu Val Phe Met Glu
225 230 235 240

Arg Leu Glu Asp Ala Gln Ala Arg Gly Ala Gln Ile Leu Ala Glu Val
245 250 255

Val Gly Tyr Gly Ile Ser Ser Asp Cys Tyr His Ile Ser Thr Pro Asp
260 265 270

Pro Ser Ala Ile Gly Ala Val Leu Ser Met Asn Arg Ala Ile Gly Asn
275 280 285

Ala His Leu Glu Pro Lys Asp Ile Gly Tyr Val Asn Ala His Ala Thr
290 295 300

Ser Thr Pro Asn Gly Asp Ser Val Glu Ala Glu Ala Val Arg Gln Val
305 310 315 320

Phe Pro Glu Gln Asn Ile Ala Val Ser Ser Val Lys Gly His Ile Gly
325 330 335

His Leu Leu Gly Ala Ala Gly Ser Val Glu Ala Ile Ala Thr Ile Phe
340 345 350

Ala Met Asn Asp Asp Val Leu Pro Ala Asn Arg Asn Leu Glu Glu Thr
355 360 365

Asp Glu Gly Asn Gly Leu Asn Leu Leu Arg Glu Asn Gln Lys Trp Ser
370 375 380

Asp Val Ser Gly Asn Lys Ser Arg Ile Ser Ile Cys Asn Ser Phe Gly
385 390 395 400

Phe Gly Ala Thr Asn Ala Ser Leu Ile Leu Lys Gln Phe
405 410

<210> 37
<211> 442
<212> PRT
<213> Saccharomyces cerevisiae

<400> 37

Met Ser Arg Arg Val Val Ile Thr Gly Leu Gly Cys Val Thr Pro Leu
1 5 10 15

Gly Arg Ser Leu Ser Glu Ser Trp Gly Asn Leu Leu Ser Ser Lys Asn
20 25 30

Gly Leu Thr Pro Ile Thr Ser Leu Pro Asn Tyr Asn Glu Asp Tyr Lys
35 40 45

Leu Arg Glu Lys Ser Ile Pro Ser Thr Ile Thr Val Gly Lys Ile Pro
50 55 60

Glu Asn Phe Gln Asn Glu Asn Ser Ala Ile Asn Lys Leu Leu Phe Thr
65 70 75 80

Ser Gln Asp Glu Arg Arg Thr Ser Ser Phe Ile Lys Leu Ala Leu Arg
85 90 95

Thr Thr Tyr Glu Ala Leu His Asn Ala Gly Leu Leu Asn Pro Asn Asp
100 105 110

Ile Thr Ile Asn Thr Ser Leu Cys Asn Leu Asp His Phe Gly Cys Leu
115 120 125

Ile Gly Ser Gly Ile Gly Ser Ile Gln Asp Ile Tyr Gln Thr Ser Leu
130 135 140

Gln Phe His Asn Asp Asn Lys Arg Ile Asn Pro Tyr Phe Val Pro Lys
145 150 155 160

Ile Leu Thr Asn Met Ala Ala Gly Asn Val Ser Ile Lys Phe Asn Leu
165 170 175

Arg Gly Leu Ser His Ser Val Ser Thr Ala Cys Ala Thr Gly Asn Asn
180 185 190

Ser Ile Gly Asp Ala Phe Asn Phe Ile Arg Leu Gly Met Gln Asp Ile
195 200 205

Cys Val Ala Gly Ala Ser Glu Thr Ser Leu His Pro Leu Ser Leu Ala
210 215 220

Gly Phe Ile Arg Ala Lys Ser Ile Thr Thr Asn Gly Ile Ser Arg Pro
225 230 235 240

Phe Asp Thr Gln Arg Ser Gly Phe Val Leu Gly Glu Gly Cys Gly Met
245 250 255

Ile Val Met Glu Ser Leu Glu His Ala Gln Lys Arg Asn Ala Asn Ile
260 265 270

Ile Ser Glu Leu Val Gly Tyr Gly Leu Ser Ser Asp Ala Cys His Ile
275 280 285

Thr Ser Pro Pro Ala Asp Gly Asn Gly Ala Lys Arg Ala Ile Glu Met
290 295 300

Ala Leu Lys Met Ala Arg Leu Glu Pro Thr Asp Val Asp Tyr Val Asn
305 310 315 320

Ala His Ala Thr Ser Thr Leu Leu Gly Asp Lys Ala Glu Cys Leu Ala
325 330 335

Val Ala Ser Ala Leu Leu Pro Gly Arg Ser Lys Ser Lys Pro Leu Tyr
340 345 350

Ile Ser Ser Asn Lys Gly Ala Ile Gly His Leu Leu Gly Ala Ala Gly
355 360 365

Ala Val Glu Ser Ile Phe Thr Ile Cys Ser Leu Lys Asp Asp Lys Met
370 375 380

Pro His Thr Leu Asn Leu Asp Asn Val Leu Thr Leu Glu Asn Asn Glu
385 390 395 400

Ala Asp Lys Leu His Phe Ile Arg Asp Lys Pro Ile Val Gly Ala Asn
405 410 415

Pro Lys Tyr Ala Leu Cys Asn Ser Phe Gly Phe Gly Gly Val Asn Thr
420 425 430

Ser Leu Leu Phe Lys Lys Trp Glu Gly Ser
435 440

<210> 38
<211> 410
<212> PRT
<213> Escherichia coli

<400> 38

Met Ser Lys Arg Arg Val Val Val Thr Gly Leu Gly Met Leu Ser Pro
1 5 10 15

Val Gly Asn Thr Val Glu Ser Thr Trp Lys Ala Leu Leu Ala Gly Gln
20 25 30

Ser Gly Ile Ser Leu Ile Asp His Phe Asp Thr Ser Ala Tyr Ala Thr
35 40 45

Lys Phe Ala Gly Leu Val Lys Asp Phe Asn Cys Glu Asp Ile Ile Ser
50 55 60

Arg Lys Glu Gln Arg Lys Met Asp Ala Phe Ile Gln Tyr Gly Ile Val
65 70 75 80

Ala Gly Val Gln Ala Met Gln Asp Ser Gly Leu Glu Ile Thr Glu Glu
85 90 95

Asn Ala Thr Arg Ile Gly Ala Ala Ile Gly Ser Gly Ile Gly Gly Leu
100 105 110

Gly Leu Ile Glu Glu Asn His Thr Ser Leu Met Asn Gly Gly Pro Arg

115 120 125

Lys Ile Ser Pro Phe Phe Val Pro Ser Thr Ile Val Asn Met Val Ala
130 135 140

Gly His Leu Thr Ile Met Tyr Gly Leu Arg Gly Pro Ser Ile Ser Ile
145 150 155 160

Ala Thr Ala Cys Thr Ser Gly Val His Asn Ile Gly His Ala Ala Arg
165 170 175

Ile Ile Ala Tyr Gly Asp Ala Asp Val Met Val Ala Gly Gly Ala Glu
180 185 190

Lys Ala Ser Thr Pro Leu Gly Val Gly Gly Phe Gly Ala Ala Arg Ala
195 200 205

Leu Ser Thr Arg Asn Asp Asn Pro Gln Ala Ala Ser Arg Pro Trp Asp
210 215 220

Lys Glu Arg Asp Gly Phe Val Leu Gly Asp Gly Ala Gly Met Leu Val
225 230 235 240

Leu Glu Glu Tyr Glu His Ala Lys Lys Arg Gly Ala Lys Ile Tyr Ala
245 250 255

Glu Leu Val Gly Phe Gly Met Ser Ser Asp Ala Tyr His Met Thr Ser
260 265 270

Pro Pro Glu Asn Gly Ala Gly Ala Ala Leu Ala Met Ala Asn Ala Leu
275 280 285

Arg Asp Ala Gly Ile Glu Ala Ser Gln Ile Gly Tyr Val Asn Ala His
290 295 300

Gly Thr Ser Thr Pro Ala Gly Asp Lys Ala Glu Ala Gln Ala Val Lys
305 310 315 320

Thr Ile Phe Gly Glu Ala Ala Ser Arg Val Leu Val Ser Ser Thr Lys
325 330 335

Ser Met Thr Gly His Leu Leu Gly Ala Ala Gly Ala Val Glu Ser Ile
340 345 350

Tyr Ser Ile Leu Ala Leu Arg Asp Gln Ala Val Pro Pro Thr Ile Asn
355 360 365

Leu Asp Asn Pro Asp Glu Gly Cys Asp Leu Asp Phe Val Pro His Glu
370 375 380

Ala Arg Gln Val Ser Gly Met Glu Tyr Thr Leu Cys Asn Ser Phe Gly
385 390 395 400

Phe Gly Gly Thr Asn Gly Ser Leu Ile Phe
405 410

<210> 39

<211> 406
<212> PRT
<213> Escherichia coli

<400> 39

Met Lys Arg Ala Val Ile Thr Gly Leu Gly Ile Val Ser Ser Ile Gly
1 5 10 15

Asn Asn Gln Gln Glu Val Leu Ala Ser Leu Arg Glu Gly Arg Ser Gly
20 25 30

Ile Thr Phe Ser Gln Glu Leu Lys Asp Ser Gly Met Arg Ser His Val
35 40 45

Trp Gly Asn Val Lys Leu Asp Thr Thr Gly Leu Ile Asp Arg Lys Val
50 55 60

Val Arg Phe Met Ser Asp Ala Ser Ile Tyr Ala Phe Leu Ser Met Glu
65 70 75 80

Gln Ala Ile Ala Asp Ala Gly Leu Ser Pro Glu Ala Tyr Gln Asn Asn
85 90 95

Pro Arg Val Gly Leu Ile Ala Gly Ser Gly Gly Gly Ser Pro Arg Phe
100 105 110

Gln Val Phe Gly Ala Asp Ala Met Arg Gly Pro Arg Gly Leu Lys Ala
115 120 125

Val Gly Pro Tyr Val Val Thr Lys Ala Met Ala Ser Gly Val Ser Ala
130 135 140

Cys Leu Ala Thr Pro Phe Lys Ile His Gly Val Asn Tyr Ser Ile Ser
145 150 155 160

Ser Ala Cys Ala Thr Ser Ala His Cys Ile Gly Asn Ala Val Glu Gln
165 170 175

Ile Gln Leu Gly Lys Gln Asp Ile Val Phe Ala Gly Gly Gly Glu Glu
180 185 190

Leu Cys Trp Glu Met Ala Cys Glu Phe Asp Ala Met Gly Ala Leu Ser
195 200 205

Thr Lys Tyr Asn Asp Thr Pro Glu Lys Ala Ser Arg Thr Tyr Asp Ala
210 215 220

His Arg Asp Gly Phe Val Ile Ala Gly Gly Gly Gly Met Val Val Val
225 230 235 240

Glu Glu Leu Glu His Ala Leu Ala Arg Gly Ala His Ile Tyr Ala Glu
245 250 255

Ile Val Gly Tyr Gly Ala Thr Ser Asp Gly Ala Asp Met Val Ala Pro
260 265 270

Ser Gly Glu Gly Ala Val Arg Cys Met Lys Met Ala Met His Gly Val
275 280 285

Asp Thr Pro Ile Asp Tyr Leu Asn Ser His Gly Thr Ser Thr Pro Val
290 295 300

Gly Asp Val Lys Glu Leu Ala Ala Ile Arg Glu Val Phe Gly Asp Lys
305 310 315 320

Ser Pro Ala Ile Ser Ala Thr Lys Ala Met Thr Gly His Ser Leu Gly
325 330 335

Ala Ala Gly Val Gln Glu Ala Ile Tyr Ser Leu Leu Met Leu Glu His
340 345 350

Gly Phe Ile Ala Pro Ser Ile Asn Ile Glu Glu Leu Asp Glu Gln Ala
355 360 365

Ala Gly Leu Asn Ile Val Thr Glu Thr Thr Asp Arg Glu Leu Thr Thr
370 375 380

Val Met Ser Asn Ser Phe Gly Phe Gly Gly Thr Asn Ala Thr Leu Val
385 390 395 400

Met Arg Lys Leu Lys Asp
405

<210> 40
<211> 416
<212> PRT
<213> Mycobacterium tuberculosis

<400> 40

Met Ser Gln Pro Ser Thr Ala Asn Gly Gly Phe Pro Ser Val Val Val
1 5 10 15

Thr Ala Val Thr Ala Thr Thr Ser Ile Ser Pro Asp Ile Glu Ser Thr
20 25 30

Trp Lys Gly Leu Leu Ala Gly Glu Ser Gly Ile His Ala Leu Glu Asp
35 40 45

Glu Phe Val Thr Lys Trp Asp Leu Ala Val Lys Ile Gly Gly His Leu
50 55 60

Lys Asp Pro Val Asp Ser His Met Gly Arg Leu Asp Met Arg Arg Met
65 70 75 80

Ser Tyr Val Gln Arg Met Gly Lys Leu Leu Gly Gly Gln Leu Trp Glu
85 90 95

Ser Ala Gly Ser Pro Glu Val Asp Pro Asp Arg Phe Ala Val Val Val
100 105 110

Gly Thr Gly Leu Gly Gly Ala Glu Arg Ile Val Glu Ser Tyr Asp Leu
115 120 125

Met Asn Ala Gly Gly Pro Arg Lys Val Ser Pro Leu Ala Val Gln Met
130 135 140

Ile Met Pro Asn Gly Ala Ala Ala Val Ile Gly Leu Gln Leu Gly Ala
145 150 155 160

Arg Ala Gly Val Met Thr Pro Val Ser Ala Cys Ser Ser Gly Ser Glu
165 170 175

Ala Ile Ala His Ala Trp Arg Gln Ile Val Met Gly Asp Ala Asp Val
180 185 190

Ala Val Cys Gly Gly Val Glu Gly Pro Ile Glu Ala Leu Pro Ile Ala
195 200 205

Ala Phe Ser Met Met Arg Ala Met Ser Thr Arg Asn Asp Glu Pro Glu
210 215 220

Arg Ala Ser Arg Pro Phe Asp Lys Asp Arg Asp Gly Phe Val Phe Gly
225 230 235 240

Glu Ala Gly Ala Leu Met Leu Ile Glu Thr Glu Glu His Ala Lys Ala
245 250 255

Arg Gly Ala Lys Pro Leu Ala Arg Leu Leu Gly Ala Gly Ile Thr Ser
260 265 270

Asp Ala Phe His Met Val Ala Pro Ala Ala Asp Gly Val Arg Ala Gly
275 280 285

Arg Ala Met Thr Arg Ser Leu Glu Leu Ala Gly Leu Ser Pro Ala Asp
290 295 300

Ile Asp His Val Asn Ala His Gly Thr Ala Thr Pro Ile Gly Asp Ala
305 310 315 320

Ala Glu Ala Asn Ala Ile Arg Val Ala Gly Cys Asp Gln Ala Ala Val
325 330 335

Tyr Ala Pro Lys Ser Ala Leu Gly His Ser Ile Gly Ala Val Gly Ala
340 345 350

Leu Glu Ser Val Leu Thr Val Leu Thr Leu Arg Asp Gly Val Ile Pro
355 360 365

Pro Thr Leu Asn Tyr Glu Thr Pro Asp Pro Glu Ile Asp Leu Asp Val
370 375 380

Val Ala Gly Glu Pro Arg Tyr Gly Asp Tyr Arg Tyr Ala Val Asn Asn
385 390 395 400

Ser Phe Gly Phe Gly Gly His Asn Val Ala Leu Ala Phe Gly Arg Tyr
405 410 415

<210> 41
<211> 438

<212> PRT
<213> Mycobacterium tuberculosis

<400> 41

Met Gly Val Pro Pro Leu Ala Gly Ala Ser Arg Thr Asp Met Glu Gly
1 5 10 15

Thr Phe Ala Arg Pro Met Thr Glu Leu Val Thr Gly Lys Ala Phe Pro
20 25 30

Tyr Val Val Val Thr Gly Ile Ala Met Thr Thr Ala Leu Ala Thr Asp
35 40 45

Ala Glu Thr Thr Trp Lys Leu Leu Leu Asp Arg Gln Ser Gly Ile Arg
50 55 60

Thr Leu Asp Asp Pro Phe Val Glu Glu Phe Asp Leu Pro Val Arg Ile
65 70 75 80

Gly Gly His Leu Leu Glu Glu Phe Asp His Gln Leu Thr Arg Ile Glu
85 90 95

Leu Arg Arg Met Gly Tyr Leu Gln Arg Met Ser Thr Val Leu Ser Arg
100 105 110

Arg Leu Trp Glu Asn Ala Gly Ser Pro Glu Val Asp Thr Asn Arg Leu
115 120 125

Met Val Ser Ile Gly Thr Gly Leu Gly Ser Ala Glu Glu Leu Val Phe
130 135 140

Ser Tyr Asp Asp Met Arg Ala Arg Gly Met Lys Ala Val Ser Pro Leu
145 150 155 160

Thr Val Gln Lys Tyr Met Pro Asn Gly Ala Ala Ala Ala Val Gly Leu
165 170 175

Glu Arg His Ala Lys Ala Gly Val Met Thr Pro Val Ser Ala Cys Ala
180 185 190

Ser Gly Ala Glu Ala Ile Ala Arg Ala Trp Gln Gln Ile Val Leu Gly
195 200 205

Glu Ala Asp Ala Ala Ile Cys Gly Gly Val Glu Thr Arg Ile Glu Ala
210 215 220

Val Pro Ile Ala Gly Phe Ala Gln Met Arg Ile Val Met Ser Thr Asn
225 230 235 240

Asn Asp Asp Pro Ala Gly Ala Cys Arg Pro Phe Asp Arg Asp Arg Asp
245 250 255

Gly Phe Val Phe Gly Glu Gly Gly Ala Leu Leu Leu Ile Glu Thr Glu
260 265 270

Glu His Ala Lys Ala Arg Gly Ala Asn Ile Leu Ala Arg Ile Met Gly

275 280 285

Ala Ser Ile Thr Ser Asp Gly Phe His Met Val Ala Pro Asp Pro Asn
290 295 300

Gly Glu Arg Ala Gly His Ala Ile Thr Arg Ala Ile Gln Leu Ala Gly
305 310 315 320

Leu Ala Pro Gly Asp Ile Asp His Val Asn Ala His Ala Thr Gly Thr
325 330 335

Gln Val Gly Asp Leu Ala Glu Gly Arg Ala Ile Asn Asn Ala Leu Gly
340 345 350

Gly Asn Arg Pro Ala Val Tyr Ala Pro Lys Ser Ala Leu Gly His Ser
355 360 365

Val Gly Ala Val Gly Ala Val Glu Ser Ile Leu Thr Val Leu Ala Leu
370 375 380

Arg Asp Gln Val Ile Pro Pro Thr Leu Asn Leu Val Asn Leu Asp Pro
385 390 395 400

Glu Ile Asp Leu Asp Val Val Ala Gly Glu Pro Arg Pro Gly Asn Tyr
405 410 415

Arg Tyr Ala Ile Asn Asn Ser Phe Gly Phe Gly Gly His Asn Val Ala
420 425 430

Ile Ala Phe Gly Arg Tyr
435

<210> 42
<211> 418
<212> PRT
<213> Rattus norvegicus

<400> 42

Ser Arg Ala Ser Arg Gln Arg Arg Ala Met Glu Glu Val Val Ile Ala
1 5 10 15

Gly Met Ser Gly Lys Leu Pro Glu Ser Glu Asn Leu Gln Glu Phe Trp
20 25 30

Ala Asn Leu Ile Gly Gly Val Asp Met Val Thr Asp Asp Asp Arg Arg
35 40 45

Trp Lys Ala Gly Leu Tyr Gly Leu Pro Lys Arg Ser Gly Lys Leu Lys
50 55 60

Asp Leu Ser Lys Phe Asp Ala Ser Phe Phe Gly Val His Pro Lys Gln
65 70 75 80

Ala His Thr Met Asp Pro Gln Leu Arg Leu Leu Leu Glu Val Ser Tyr
85 90 95

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Glu Ala Ile Val Asp Gly Gly Ile Asn Pro Ala Ser Leu Arg Gly Thr
            100                 105                 110

Asn Thr Gly Val Trp Val Gly Val Ser Gly Ser Glu Ala Ser Glu Ala
        115                 120                 125

Leu Ser Arg Asp Pro Glu Thr Leu Leu Gly Tyr Ser Met Val Gly Cys
    130                 135                 140

Gln Arg Ala Met Met Ala Asn Arg Leu Ser Phe Phe Phe Asp Phe Lys
145                 150                 155                 160

Gly Pro Ser Ile Ala Leu Asp Thr Ala Cys Ser Ser Ser Leu Leu Ala
                165                 170                 175

Leu Gln Asn Ala Tyr Gln Ala Ile Arg Ser Gly Glu Cys Pro Ala Ala
            180                 185                 190

Ile Val Gly Gly Ile Asn Leu Leu Leu Lys Pro Asn Thr Ser Val Gln
        195                 200                 205

Phe Met Lys Leu Gly Met Leu Ser Pro Asp Gly Thr Cys Arg Ser Phe
    210                 215                 220

Asp Asp Ser Gly Asn Gly Tyr Cys Arg Ala Glu Ala Val Val Ala Val
225                 230                 235                 240

Leu Leu Thr Lys Lys Ser Leu Ala Arg Arg Val Tyr Ala Thr Ile Leu
                245                 250                 255

Asn Ala Gly Thr Asn Thr Asp Gly Cys Lys Glu Gln Gly Val Thr Phe
            260                 265                 270

Pro Ser Gly Glu Ala Gln Glu Gln Leu Ile Arg Ser Leu Tyr Gln Pro
        275                 280                 285

Gly Gly Val Ala Pro Glu Ser Leu Glu Tyr Ile Glu Ala His Gly Thr
    290                 295                 300

Gly Thr Lys Val Gly Asp Pro Gln Glu Leu Asn Gly Ile Thr Arg Ser
305                 310                 315                 320

Leu Cys Ala Phe Arg Gln Ser Pro Leu Leu Ile Gly Ser Thr Lys Ser
                325                 330                 335

Asn Met Gly His Pro Glu Pro Ala Ser Gly Leu Ala Ala Leu Thr Lys
            340                 345                 350

Val Leu Leu Ser Leu Glu Asn Gly Val Trp Ala Pro Asn Leu His Phe
        355                 360                 365

His Asn Pro Asn Pro Glu Ile Pro Ala Leu Leu Asp Gly Arg Leu Gln
    370                 375                 380

Val Val Asp Arg Pro Leu Pro Val Arg Gly Gly Ile Val Gly Ile Asn
385                 390                 395                 400
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Ser Phe Gly Phe Gly Gly Ala Asn Val His Val Ile Leu Gln Pro Asn
405 410 415

Ala Ser

<210> 43
<211> 401
<212> PRT
<213> Rhizobium sp. Nodulation Protein E

<400> 43

Met Asp Arg Arg Val Val Ile Thr Gly Ile Gly Gly Leu Cys Gly Leu
1 5 10 15

Gly Thr Asn Ala Ala Ser Ile Trp Lys Glu Met Arg Glu Gly Pro Ser
20 25 30

Ala Ile Ser Pro Ile Ile Thr Thr Asp Leu Tyr Asp Leu Glu Gly Thr
35 40 45

Val Gly Leu Glu Ile Lys Ala Ile Pro Glu His Asp Ile Pro Arg Lys
50 55 60

Gln Leu Val Ser Met Asp Arg Phe Ser Leu Leu Ala Val Ile Ala Ala
65 70 75 80

Thr Glu Ala Met Lys Gln Ala Gly Leu Ser Cys Asp Glu Gln Asn Ala
85 90 95

His Arg Phe Gly Ala Ala Met Gly Leu Gly Gly Pro Gly Trp Asp Thr
100 105 110

Ile Glu Glu Thr Tyr Arg Ser Ile Leu Leu Asp Gly Val Thr Arg Ala
115 120 125

Arg Ile Phe Thr Ala Pro Lys Gly Met Pro Ser Ala Ala Ala Gly His
130 135 140

Val Ser Ile Phe Leu Gly Leu Arg Gly Pro Val Phe Gly Val Thr Ser
145 150 155 160

Ala Cys Ala Ala Gly Asn His Ala Ile Ala Ser Ala Val Asp Gln Ile
165 170 175

Arg Leu Gly Arg Ala Asp Val Met Leu Ala Gly Gly Ser Asp Ala Pro
180 185 190

Leu Thr Trp Gly Val Leu Lys Ser Trp Glu Ala Leu Arg Val Leu Ala
195 200 205

Pro Asp Thr Cys Arg Pro Phe Ser Ala Asp Arg Lys Gly Val Val Leu
210 215 220

Gly Glu Gly Ala Gly Met Ala Val Leu Glu Ser Tyr Glu His Ala Ala
225 230 235 240

Ala Arg Gly Ala Thr Met Leu Ala Glu Val Ala Gly Ile Gly Leu Ser
245 250 255

Gly Asp Ala Tyr Asp Ile Val Met Pro Ser Ile Glu Gly Pro Glu Ala
260 265 270

Ala Met Arg Ser Cys Leu Ala Asp Ala Glu Leu Asn Pro Asp Asp Val
275 280 285

Asp Tyr Leu Asn Ala His Gly Thr Gly Thr Val Ala Asn Asp Glu Met
290 295 300

Glu Thr Ala Ala Ile Lys Arg Val Phe Gly Asp His Ala Phe Gln Met
305 310 315 320

Ser Val Ser Ser Thr Lys Ser Met His Ala His Cys Leu Gly Ala Ala
325 330 335

Ser Ala Leu Glu Met Ile Ala Cys Val Met Ala Ile Gln Glu Gly Val
340 345 350

Ile Pro Pro Thr Ala Asn Tyr Arg Glu Pro Asp Pro Gln Cys Asp Leu
355 360 365

Asp Val Thr Pro Asn Val Pro Arg Glu Gln Arg Cys Gly Ser Met Ser
370 375 380

Asn Ala Phe Ala Met Gly Gly Thr Asn Ala Val Leu Ala Phe Arg Gln
385 390 395 400

Val

<210> 44
<211> 419
<212> PRT
<213> Streptomyces polyketide synthase

<400> 44

Val Asn Arg Arg Ile Val Ile Thr Gly Ile Gly Val Val Ala Pro Gly
1 5 10 15

Ala Val Gly Thr Lys Pro Phe Trp Glu Leu Leu Leu Ser Gly Thr Thr
20 25 30

Ala Thr Arg Ala Ile Ser Thr Phe Asp Ala Thr Pro Phe Arg Ser Arg
35 40 45

Ile Ala Ala Glu Cys Asp Phe Asp Pro Val Ala Ala Gly Leu Ser Ala
50 55 60

Glu Gln Ala Arg Arg Leu Asp Arg Ala Gly Gln Phe Ala Leu Val Ala
65 70 75 80

Gly Gln Glu Ala Leu Ala Asp Ser Gly Leu Arg Ile Asp Glu Asp Ser

85 90 95

Ala His Arg Val Gly Val Cys Val Gly Thr Ala Val Gly Cys Thr Gln
100 105 110

Lys Leu Glu Ser Glu Tyr Val Ala Leu Ser Ala Gly Gly Ala His Trp
115 120 125

Val Val Asp Pro Gly Arg Gly Ser Pro Glu Leu Tyr Asp Tyr Phe Val
130 135 140

Pro Ser Ser Leu Ala Ala Glu Val Ala Trp Leu Ala Gly Ala Glu Gly
145 150 155 160

Pro Val Asn Ile Val Ser Ala Gly Cys Thr Ser Gly Ile Asp Ser Ile
165 170 175

Gly Tyr Ala Cys Glu Leu Ile Arg Glu Gly Thr Val Asp Ala Met Val
180 185 190

Ala Gly Gly Val Asp Ala Pro Ile Ala Pro Ile Thr Val Ala Cys Phe
195 200 205

Asp Ala Ile Arg Ala Thr Ser Asp His Asn Asp Thr Pro Glu Thr Ala
210 215 220

Ser Arg Pro Phe Ser Arg Ser Arg Asn Gly Phe Val Leu Gly Glu Gly
225 230 235 240

Gly Ala Ile Val Val Leu Glu Glu Ala Glu Ala Ala Val Arg Arg Gly
245 250 255

Ala Arg Ile Tyr Ala Glu Ile Gly Gly Tyr Ala Ser Arg Gly Asn Ala
260 265 270

Tyr His Met Thr Gly Leu Arg Ala Asp Gly Ala Glu Met Ala Ala Ala
275 280 285

Ile Thr Ala Ala Leu Asp Glu Ala Arg Arg Asp Pro Ser Asp Val Asp
290 295 300

Tyr Val Asn Ala His Gly Thr Ala Thr Lys Gln Asn Asp Arg His Glu
305 310 315 320

Thr Ser Ala Phe Lys Arg Ser Leu Gly Glu His Ala Tyr Arg Val Pro
325 330 335

Ile Ser Ser Ile Lys Ser Met Ile Gly His Ser Leu Gly Ala Val Gly
340 345 350

Ser Leu Glu Val Ala Ala Thr Ala Leu Ala Val Glu Tyr Gly Val Ile
355 360 365

Pro Pro Thr Ala Asn Leu His Asp Pro Asp Pro Glu Leu Asp Leu Asp
370 375 380

Tyr Val Pro Leu Thr Ala Arg Glu Lys Arg Val Arg His Ala Leu Thr

385 390 395 400

Val Gly Ser Gly Phe Gly Gly Phe Gln Ser Ala Met Leu Leu Ser Arg
405 410 415

Leu Glu Arg

<210> 45
<211> 416
<212> PRT
<213> Synechocystis sp.

<400> 45

Met Ala Asn Leu Glu Lys Lys Arg Val Val Val Thr Gly Leu Gly Ala
1 5 10 15

Ile Thr Pro Ile Gly Asn Thr Leu Gln Asp Tyr Trp Gln Gly Leu Met
20 25 30

Glu Gly Arg Asn Gly Ile Gly Pro Ile Thr Arg Phe Asp Ala Ser Asp
35 40 45

Gln Ala Cys Arg Phe Gly Gly Glu Val Lys Asp Phe Asp Ala Thr Gln
50 55 60

Phe Leu Asp Arg Lys Glu Ala Lys Arg Met Asp Arg Phe Cys His Phe
65 70 75 80

Ala Val Cys Ala Ser Gln Gln Ala Ile Asn Asp Ala Lys Leu Val Ile
85 90 95

Asn Glu Leu Asn Ala Asp Glu Ile Gly Val Leu Ile Gly Thr Gly Ile
100 105 110

Gly Gly Leu Lys Val Leu Glu Asp Gln Gln Thr Ile Leu Leu Asp Lys
115 120 125

Gly Pro Ser Arg Cys Ser Pro Phe Met Ile Pro Met Met Ile Ala Asn
130 135 140

Met Ala Ser Gly Leu Thr Ala Ile Asn Leu Gly Ala Lys Gly Pro Asn
145 150 155 160

Asn Cys Thr Val Thr Ala Cys Ala Ala Gly Ser Asn Ala Ile Gly Asp
165 170 175

Ala Phe Arg Leu Val Gln Asn Gly Tyr Ala Lys Ala Met Ile Cys Gly
180 185 190

Gly Thr Glu Ala Ala Ile Thr Pro Leu Ser Tyr Ala Gly Phe Ala Ser
195 200 205

Ala Arg Ala Leu Ser Phe Arg Asn Asp Asp Pro Leu His Ala Ser Arg
210 215 220

Pro Phe Asp Lys Asp Arg Asp Gly Phe Val Met Gly Glu Gly Ser Gly
225 230 235 240

Ile Leu Ile Leu Glu Glu Leu Glu Ser Ala Leu Ala Arg Gly Ala Lys
245 250 255

Ile Tyr Gly Glu Met Val Gly Tyr Ala Met Thr Cys Asp Ala Tyr His
260 265 270

Ile Thr Ala Pro Val Pro Asp Gly Arg Gly Ala Thr Arg Ala Ile Ala
275 280 285

Trp Ala Leu Lys Asp Ser Gly Leu Lys Pro Glu Met Val Ser Tyr Ile
290 295 300

Asn Ala His Gly Thr Ser Thr Pro Ala Asn Asp Val Thr Glu Thr Arg
305 310 315 320

Ala Ile Lys Gln Ala Leu Gly Asn His Ala Tyr Asn Ile Ala Val Ser
325 330 335

Ser Thr Lys Ser Met Thr Gly His Leu Leu Gly Gly Ser Gly Gly Ile
340 345 350

Glu Ala Val Ala Thr Val Met Ala Ile Ala Glu Asp Lys Val Pro Pro
355 360 365

Thr Ile Asn Leu Glu Asn Pro Asp Pro Glu Cys Asp Leu Asp Tyr Val
370 375 380

Pro Gly Gln Ser Arg Ala Leu Ile Val Asp Val Ala Leu Ser Asn Ser
385 390 395 400

Phe Gly Phe Gly Gly His Asn Val Thr Leu Ala Phe Lys Lys Tyr Gln
405 410 415

<210> 46
<211> 441
<212> PRT
<213> Vibrio harveyi

<400> 46

Ser Asp Tyr His Asn His Phe Ile Asn Val Lys Ala Val Ala Arg Pro
1 5 10 15

Leu Phe Phe Cys Leu Phe Trp Arg Thr Ser Val Ala Asn Asn Arg Arg
20 25 30

Val Val Ile Thr Gly Leu Gly Ile Val Ser Pro Val Gly Asn Thr Val
35 40 45

Ala Thr Ala Trp Glu Ala Ile Lys Ser Gly Ile Ser Gly Ile Glu Asn
50 55 60

Ile Glu His Phe Asp Thr Thr Asn Phe Ser Thr Lys Phe Ala Gly Leu
65 70 75 80

Val Asn Asp Phe Asp Ala Glu Ser Val Gly Ile Asn Arg Lys Asp Cys
85 90 95

Arg Lys Met Asp Leu Phe Ile Gln Tyr Gly Ile Ala Ala Ala Glu Gln
100 105 110

Ala Leu Thr Asp Ser Gly Leu Glu Ile Thr Glu Gln Asn Ala Thr Arg
115 120 125

Ile Gly Thr Ala Ile Gly Ser Gly Ile Gly Gly Leu Gly Leu Ile Glu
130 135 140

Gln Asn Val His Ser Phe Val Lys Gly Gly Ala Arg Lys Val Ser Pro
145 150 155 160

Phe Phe Val Pro Ala Thr Ile Val Asn Met Val Ala Gly His Val Ser
165 170 175

Ile Arg Asn Asn Leu Lys Gly Pro Asn Ile Ala Ile Ala Thr Ala Cys
180 185 190

Thr Ser Gly Thr His Cys Ile Gly Gln Ser Ala Arg Met Ile Ala Tyr
195 200 205

Gly Asp Ala Asp Val Met Val Ala Gly Gly Ala Glu Lys Ala Ser Thr
210 215 220

Glu Met Gly Leu Ala Gly Phe Gly Ser Ala Lys Ala Leu Ser Thr Arg
225 230 235 240

Asn Asp Asp Pro Gln Lys Ala Ser Arg Pro Trp Asp Lys Asp Arg Asp
245 250 255

Gly Phe Val Leu Gly Asp Gly Ala Gly Val Leu Val Met Glu Glu Tyr
260 265 270

Glu His Ala Val Ala Arg Gly Ala Thr Ile Tyr Ala Glu Leu Ala Gly
275 280 285

Phe Gly Met Ser Gly Asp Ala Phe His Met Thr Ser Pro Pro Glu Asp
290 295 300

Gly Ala Gly Ala Ala Leu Ser Met Asn Asn Ala Ile Ala Asp Ala Gly
305 310 315 320

Ile Thr Ala Asp Lys Val Gly Tyr Val Asn Ala His Gly Thr Ser Thr
325 330 335

Pro Ala Gly Asp Lys Ala Glu Thr Ala Ala Val Lys Ser Val Phe Gly
340 345 350

Glu His Ala Tyr Thr Leu Ala Val Ser Ser Thr Lys Ser Met Thr Gly
355 360 365

His Leu Leu Gly Ala Ala Gly Ala Ile Glu Ala Ile Phe Thr Ile Leu
370 375 380

Ala Leu Lys Asp Gln Ile Leu Pro Pro Thr Ile Asn Leu Glu Asn Pro
385 390 395 400

Ser Glu Gly Cys Asp Leu Asp Tyr Val Thr Asp Gly Ala Arg Pro Val
405 410 415

Asn Met Glu Tyr Ala Leu Ser Asn Ser Phe Gly Phe Gly Gly Thr Asn
420 425 430

Gly Ser Leu Leu Phe Lys Lys Ala Asp
435 440

<210> 47
<211> 409
<212> PRT
<213> Escherichia coli

<400> 47

Ser Lys Arg Arg Val Val Val Thr Gly Leu Gly Met Leu Ser Pro Val
1 5 10 15

Gly Asn Thr Val Glu Ser Thr Trp Lys Ala Leu Leu Ala Gly Gln Ser
20 25 30

Gly Ile Ser Leu Ile Asp His Phe Asp Thr Ser Ala Tyr Ala Thr Lys
35 40 45

Phe Ala Gly Leu Val Lys Asp Phe Asn Cys Glu Asp Ile Ile Ser Arg
50 55 60

Lys Glu Gln Arg Lys Met Asp Ala Phe Ile Gln Tyr Gly Ile Val Ala
65 70 75 80

Gly Val Gln Ala Met Gln Asp Ser Gly Leu Glu Ile Thr Glu Glu Asn
85 90 95

Ala Thr Arg Ile Gly Ala Ala Ile Gly Ser Gly Ile Gly Gly Leu Gly
100 105 110

Leu Ile Glu Glu Asn His Thr Ser Leu Met Asn Gly Gly Pro Arg Lys
115 120 125

Ile Ser Pro Phe Phe Val Pro Ser Thr Ile Val Asn Met Val Ala Gly
130 135 140

His Leu Thr Ile Met Tyr Gly Leu Arg Gly Pro Ser Ile Ser Ile Ala
145 150 155 160

Thr Ala Cys Thr Ser Gly Val His Asn Ile Gly His Ala Ala Arg Ile
165 170 175

Ile Ala Tyr Gly Asp Ala Asp Val Met Val Ala Gly Gly Ala Glu Lys
180 185 190

Ala Ser Thr Pro Leu Gly Val Gly Gly Phe Gly Ala Ala Arg Ala Leu

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        195                 200                 205

Ser Thr Arg Asn Asp Asn Pro Gln Ala Ala Ser Arg Pro Trp Asp Lys
    210                 215                 220

Glu Arg Asp Gly Phe Val Leu Gly Asp Gly Ala Gly Met Leu Val Leu
225                 230                 235                 240

Glu Glu Tyr Glu His Ala Lys Lys Arg Gly Ala Lys Ile Tyr Ala Glu
                245                 250                 255

Leu Val Gly Phe Gly Met Ser Ser Asp Ala Tyr His Met Thr Ser Pro
            260                 265                 270

Pro Glu Asn Gly Ala Gly Ala Ala Leu Ala Met Ala Asn Ala Leu Arg
        275                 280                 285

Asp Ala Gly Ile Glu Ala Ser Gln Ile Gly Tyr Val Asn Ala His Gly
    290                 295                 300

Thr Ser Thr Pro Ala Gly Asp Lys Ala Glu Ala Gln Ala Val Lys Thr
305                 310                 315                 320

Ile Phe Gly Glu Ala Ala Ser Arg Val Leu Val Ser Ser Thr Lys Ser
                325                 330                 335

Met Thr Gly His Leu Leu Gly Ala Ala Gly Ala Val Glu Ser Ile Tyr
            340                 345                 350

Ser Ile Leu Ala Leu Arg Asp Gln Ala Val Pro Pro Thr Ile Asn Leu
        355                 360                 365

Asp Asn Pro Asp Glu Gly Cys Asp Leu Asp Phe Val Pro His Glu Ala
    370                 375                 380

Arg Gln Val Ser Gly Met Glu Tyr Thr Leu Cys Asn Ser Phe Gly Phe
385                 390                 395                 400

Gly Gly Thr Asn Gly Ser Leu Ile Phe
                405
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